

Claims:

1 (Amended). A system for designing visual information reproduced on a monitor unit utilized in combination with a programmable logic controller (PLC), said system comprising:

an image design tool operating on a personal computer; and

said monitor unit connected to said PLC which executes a program for controlling an operation of a device coupled to said PLC,

said monitor unit including a display, a memory, and a control section for controlling the operation of said monitor unit;

said display giving thereon task information to be performed by the device managed by the PLC, and including a touch screen for entry of a specific instruction to be carried out by the PLC for control of said device,

said image design tool creating a source display code for displaying said visual information on said display,

said image design tool being provided with a conversion means for translating said source display code into a corresponding bitmapped image and exporting said bitmapped image to the memory of said monitor unit for immediate reproduction of said visual information on said display,

said monitor unit being provided with a memory for storing the bitmapped image,

said image design tool having means for drawing a plurality of rectangular frames to be included in said visual information, each rectangular frame being written in said source display code which is translated by said conversion means into a corresponding bitmapped image for reproduction on said display, said

conversion means storing said bitmapped image for each said rectangular frame in said memory.

2. The system as set forth in claim 1, wherein

said monitor unit includes the touch screen switch on said display for generating a switch output to said PLC in response to a user's action of touching a particular area on said display,

said image design tool having a means of creating a switch control code for defining said switch output, and a transfer means of transferring said switch control code to the memory of said monitor unit, and

said control section of said monitor unit processing said switch control code stored in said memory in order to associate said switch output to a particular function of said PLC for control of said device connected to said PLC.

3 (Amended). The system as set forth in claim 2, wherein

said transfer means feeds said source display code to the memory of said touch screen unit,

said image design tool further including a retrieve means for retrieving said source display code and said switch control code back from said memory for modification of said visual information and said switch control code at said image design tool,

said image design tool transferring, to said memory, the source display code and the bitmapped image with regard to individual visual information to be

displayed on plural pages of said display, and

said retrieving means retrieving, from the memory, the source display code
and the switch control code with regard to each of said pages.

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4. The system as set forth in claim 1, wherein

said image design tool has a screen area for drawing said visual information therein, said screen area being divided into a plurality of unit zones extending in parallel with each other and having a length and a unit width defined by a fixed number of dots,

said image design tool having a means of drawing a rectangular frame to be included in said visual information, said rectangular frame being written in said source display code which is translated by said conversion means into a corresponding bitmapped image for reproduction on said display,

said image design tool having a reshaping means of resizing the bitmapped image of said rectangular frame into a modified rectangular frame having a width equal to an integer multiple of said unit width, dividing said modified rectangular frame into one or more segments each having the unit width, and transferring said one or more segments to the memory of said monitor unit so as to be recombined on said display to reproduce said modified rectangular frame.

5. The system as set forth in claim 2, wherein

said image design tool has a screen area for drawing said visual information

therein, said screen area being divided into a plurality of unit zones extending in parallel with each other and having a length and a unit width defined by a fixed number of dots,

said image design tool having a means of drawing a rectangular frame to be included in said visual information and of defining said rectangular frame as corresponding to a touch sensitive part said touch screen switch, said rectangular frame being written in said source display code which is translated by said conversion means into a corresponding bitmapped image for reproduction on said display,

said image design tool having a reshaping means of resizing the bitmapped image of said rectangular frame into a modified rectangular frame having a width equal to an integer multiple of said unit width, dividing said modified rectangular frame into one or more segments having the unit width, and transferring said one or more segments to the memory of said monitor unit so as to be recombined on said display to reproduce said modified rectangular frame.

6. The system as set forth in claim 1, wherein

said image design tool has capability of selecting a particular linguistic code from a set of different linguistic codes so as to create said visual information by using a string of characters according to the selected linguistic code, and of including an identifier of identifying the selected linguistic code into said source display code such that, when the source display code is retrieved from the memory of said monitor unit to said image design tool, the string of the characters of the selected linguistic code is reproduced on said image design tool.

7. The system as set forth in claim 1, wherein the memory of said monitor unit comprises:

a virtual image area which has a size greater than a screen size given to said display and in which said bitmapped image is loaded to give a virtual image of said bitmapped image, and

an actual image area which has a size equal to the screen size of said display and which trims said virtual image from said virtual image area into an actual image fitted in the screen size and stores said actual image;

said controller section of the monitor unit executing to transfer said actual image from said actual image area to said display.